ENTOMOLOGICAL NEWS

VOL. LX JANUARY, 1949 No. 1

Xiphocentronidae, a New Family of Trichoptera

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In collections made by Mr. Harry Hoogstraal during his 1940 expedition to Mexico are a few specimens of a most unusual small black caddisfly. This species combines characters which were formerly considered distinctive for three families, the Rhyacophilidae, Philopotamidae, and Psychomyiidae—such a mixture of characters that at first I was unable to place the species at all. Finally it was tracked to Brauer's long lost genus *Xiphocentron* and it now appears necessary to erect a new family for its reception. During the course of preparation of this paper, a second species of the genus from southern China was sent to me by Dr. E. S. Ross.

Xiphocentronidae new family

Characteristics.—Size moderate, body fairly slender. Antennae reaching to about end of abdomen. Maxillary palps of both sexes 5-segmented, fig. 6, the two basal segments short, the third subequal to the first two together, the fourth one and a half times the third, the fifth long, whiplike and multi-segmented, as long as the third and fourth combined. Labial palps with two basal segments short, third longer and multi-segmented. Dorsum of head with no ocelli, but with three pairs of prominent warts and sutures as shown in fig. 5. Mesopraescutum well delineated with sutures, elongate, the sides converging posteriad and the posterior margin truncate, fig. 9. Legs elongate, spurs 2–4–3 in the male, 2–4–4 in the female. Wings narrow, the venation reduced, figs. 1–4. Female abdomen ending in an

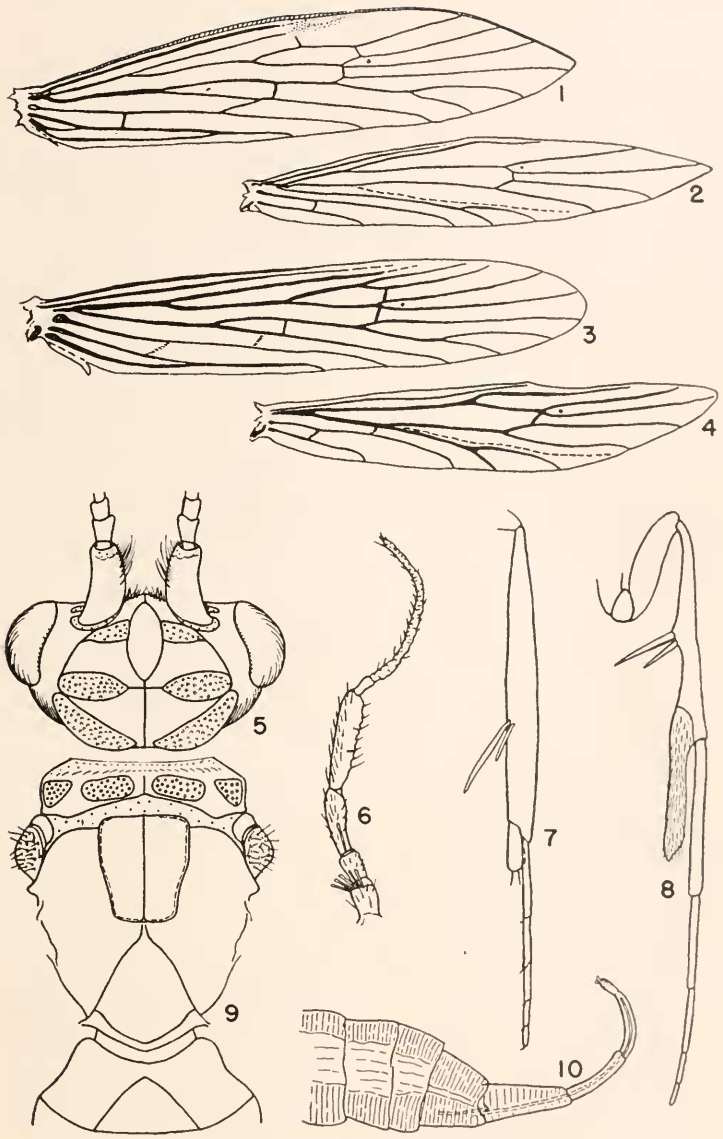
extensile narrow ovipositor, fig. 10. Male genitalia highly developed and complicated, figs. 11, 12.

Familiotype.—*Xiphocentron* Brauer.

The affinities of this family are complicated. The well-developed mesopraescutum and female ovipositor indicate a strong affinity with the Rhyacophilidae; the head sutures and multi-segmented terminal segment of the palps would indicate close relationship with the Philopotamidae; and the lack of ocelli and various characters of the male genitalia, especially the reduced ninth tergite, distinct cerci, and 1-segmented claspers, indicate an alliance with the Psychomyiidae. Looking at these data from the opposite viewpoint we find that the Xiphocentronidae differ from the Rhyacophilidae in having multi-segmented terminal segments of the palps and in lacking ocelli; from the Philopotamidae in lacking ocelli and in having a distinct mesopraescutal sclerite and a female ovipositor; and from the Psychomyiidae in having prominent head sutures, mesopraescutum, and a female ovipositor. The Xiphocentronidae may well be close to the ancestral stock of the Psychomyiidae. If so, this branch must have arisen from the philopotamid stem before the praescutum was lost, and after the division of the two lines the Xiphocentronidae lost their ocelli but preserved the praescutum while the Philopotamidae preserved their ocelli but lost the praescutum. The larvae of the Xiphocentronidae have not yet been found, but will doubtless throw additional light on the relationships of this group.

This new family may be oriented with other families having the multi-segmented terminal segment of the palps by this table:

1. Ocelli present ..... **Philopotamidae, Stenopsychidae**
   Ocelli absent 2
2. Mesopraescutum set off by distinct sutures, fig. 9
   Xiphocentronidae
   Mesopraescutum fused with scutum, its sutures completely obliterated; in Psychomyiidae a small pair of scutal warts present, one on each side of meson just anterior to scutellum ..... **Psychomyiidae, Hydropsychidae**



Parts of *Xiphocentron*

X. hwangi: 1, front wing; 2, hind wing.

X. mexico: 3, front wing; 4, hind wing; 5, head, dorsal aspect; 6, maxillary palpus; 7, male hind tibia and tarsi; 9, thorax, dorsal aspect; 10, apex of abdomen, lateral aspect.

X. bilimekii: 8, male hind leg (after Brauer).

Xiphocentron Brauer

Xiphocentron Brauer (1870, Verh. Zool. Bot. Gesell. Wien 20: 66; 1871, *ibid.* 21: 103, pl. 2); Ulmer (1907, Gen. Insect. 60: 176, figs. 217*a*, *b*). Genotype, monobasic.—*Xiphocentron bilimekii* Brauer.

Of the three species considered as belonging to this genus, I have seen specimens of only the two new ones. To my knowledge, the genotype is known only by Brauer's illustrations. These show characters of venation, tibial spurs, and shape of male genitalia so in agreement with these structures in the other two species that there seems no doubt of the relationship and association.

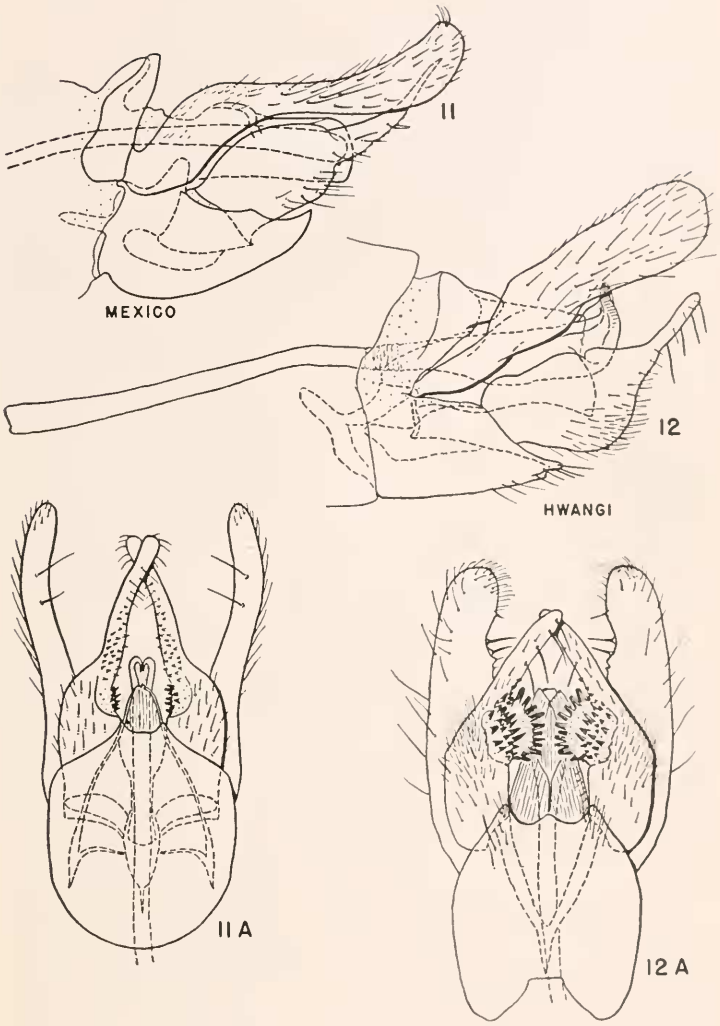
It is interesting that the members of this small, primitive family are widely separated geographically, two from Mexico and one from China. This could indicate a separation of considerable geologic time. As a matter of fact, the Chinese species shows considerable difference from the Mexican in wing venation and male tibial spurs, and the two groups may ultimately be considered as generically distinct. The two show such close affinity in genitalia, however, that I prefer to follow a broader generic concept until more information about the fauna indicates the desirability of a change in status.

Key to species—males

1. Apical spur of hind tibia at least half as long as tibia, fig. 8. Known from Mexico ..... **bilimekii**
   Apical spur of hind tibia less than a fourth as long as tibia, fig. 7 2
2. Clasper with a large oval ring of black spines on meson at point of narrowing, the mesal spines flat and truncate and forming a fairly regular comb, fig. 12*A*. Known from China ..... **hwangi**
   Claspers with only an irregular patch of much shorter spines on meson at point of narrowing, fig. 11*A*. Known from Mexico ..... **mexico**

Xiphocentron mexico new species

Male. Length from tip of head to tip of folded wings, 6.5 mm. Color dark brown, lighter along the sutures and on the venter, the wings with light brown membrane and brown pubescence.



Male Genitalia of *Xiphocentron*
X. mexico: 11, lateral aspect; 11A, ventral aspect.
X. hwangi: 12, lateral aspect; 12A, ventral aspect.

General characteristics as described above under family or genus. Hind tibia with apical spur wide and flat, bearing two spines at

apex, and only about one-seventh as long as tibia, fig. 7. Wing venation illustrated in figs. 3, 4.

Genitalia as in fig. 11. Ninth tergite forming a high, short, and somewhat hood-like sclerite, ninth sternite long, forming a round sclerite beneath the claspers, narrowed and excavated at apex. Tenth tergite represented by a series of membranous folds above the aedeagus. Cercus long and sinuate, up- and in-curved at apex, only sparsely haired. Clasper 1-segmented, the base large and robust, the apex elongate and ribbon-like; the mesal margin, fig. 11*A*, bears a cluster of short, sharp teeth at base of narrowed portion, the latter bearing a series of scattered, shorter ventro-mesal teeth to slightly beyond the middle. Aedeagus tubular and elongate, extending into the seventh or sixth segment, the apex little modified. Internally there is a series of sclerotized braces connecting cerci, claspers, and aedeagus guides.

Female. Similar in size, color, and general structure to male, differing chiefly in spur count, which is 2–4–4, spurs of front tibia short, hind tibia with outer apical spur twice as long as inner spur. Apex of abdomen simple, fig. 10, the terminal segments forming a slender, extensile tube.

Holotype, male.—Villa Santiago, Nueva Leon, Mexico, elev. 2,500 ft., June 22, 1940, H. Hoogstraal. *Allotype*, female.—Same data. In the collection of the Illinois Natural History Survey.

Xiphocentron hwangi new species

Male. Length 7.0 mm. Color dark brown, slightly lighter on the venter, the wings covered with dense, matlike, and very dark hair. General structure as for genus. Hind tibia with apical spur elongate and slender, a fifth as long as tibia. Wings, figs. 1, 2, sharply pointed, the front wings with costa greatly thickened, both wings with the venation differing in several details from that of *mexico* as shown in figs. 1–4. Genitalia, fig. 12, with ninth tergite short, produced on each side into an ovate lobe; ninth sternite much larger, the apex incised to form a mesal and a pair of lateral processes, fig. 12*A*. Tenth tergite

membranous. Cercus elongate, the base narrow, the apical portion wide, thin, and rounded at apex, sparsely haired. Clasper with broad base, apical portion forming a flattened, finger-like, slender process bearing a ventral row of long, down-pointed setae; the mesal margin at base of "finger" bears an oval membranous area on which is situated an irregular circle of stout, black spines, the lateral ones pointed, the mesal ones truncate and forming a peglike comb. Aedeagus with basal portion very long and slender, this joining a crinkly neck area, the apical portion beyond this enlarging and ending in an upturned sclerotized portion. Internal connecting rods complex.

Female. Size 6.5 mm. Similar in color and general structure to male. Hind tibia with two apical spurs, the outer one twice length of inner. Apex of abdomen tubular, as in *mexico*.

Holotype, male.—Tung-lu, China, April, 1926, Mrs. Dora E. Wright. In the collection of the California Academy of Science. *Allotype,* female, and 18 ♂ and 2 ♀ *paratypes.*—Same data, deposited in the collections of the California Academy of Science and the Illinois Natural History Survey.

The Present Status of the Distribution of Vespa crabro var. germana Christ in North America [1]

By Prof. M. W. Wing, Department of Zoology and Entomology, North Carolina State College, Raleigh, North Carolina

Vespa crabro var. *germana* Christ, the common hornet of Europe, was introduced into North America in the middle of the nineteenth century. H. de Saussure (Ent. News 9: 145, 1898) reported that it was captured in 1854 in the eastern United States. J. Bequaert (Ent. Amer., N.S., 12 (2): 86, 1931) reported that J. Angus, in 1871, stated that this hornet had been common in the vicinity of West Farms, New York, for the past 25 years. It seems probable that southeastern New York State is the focal point from which this powerful wasp has

[1] I wish here to express my thanks to Dr. J. C. Bequaert for his kindness in sending me several records and for critically reading the manuscript and suggesting several improvements.